REMARKS

In response to the Office Action mailed October 5, 2005, the Applicant submits this Reply. In view of the foregoing amendments and following remarks, reconsideration is requested.

In the foregoing amendments, claims 1, 14-16, 18, 22-38 have been amended and claims 9-11 and 17 have been cancelled. Claim 2-8, 12-13 and 19-21 are unchanged. Accordingly claims 1-8, 12-16 and 18-38 remain in this application, of which claims 1, 22-29, and 34-38 are independent. No fee is due for claims for this amendment.

In the Office Action, claims 1-38 were rejected.

Rejection Under 35 U.S.C. §112, second paragraph

Claims 1-28, 30-32 and 36-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention, because the term "neighborhood" was deemed to be relative. The claims have been amended to use language similar to that found claim 29, which was not rejected on this ground. Accordingly, this rejection is overcome.

Rejection Under 35 U.S.C. §102

Claims 1-2, 12, 14, 22-23, 25-32, and 34-38, of which claims 1, 22-23, 25-29 and 34-38 are independent, were rejected under 35 U.S.C. §102(b) in view of U.S. Patent 5,642,171 ("Baumgartner"). The rejection is respectfully traversed.

According to Baumgartner, video and audio data are played back in synchronization. The synchronization method involves several steps. First, "there [must] be a common starting point for the audio and video data." Col. 13, lines 49-50. After playback is initiated, a "synchronization method . . . is called periodically during multimedia display to synchronize the video and audio data streams." Col. 6, lines 39-51. In particular, "the computer system includes a timer which periodically interrupts [a media control interface layer and driver] to direct [it] to invoke the synchronization module . . .." Col 12, lines 12-15. It is then "determin[ed] what video frame number is currently being played." Col. 6, line 47-48 and Col. 13, lines 25-27. It also "determines the current audio position, i.e., which audio byte is currently being played."

Col. 6, lines 48-49 and Col. 13, lines 29-30. This "current position of the audio and video data" is determined by "quer[ying] the audio and video drivers." Col. 12, lines 17-18. The synchronization method then "calculates the equivalent audio frame number being played using [an] audio frame rate value." Col. 13, lines 36-38 and Col. 6, line 50. "The synchronization method compares the video and audio frame positions and computes a synchronization error value." Col. 6, lines 50-52. "The synchronization error value is used to assign a tempo value . . . [which is used to adjust] the video tempo [or] the audio tempo." Col. 6, lines 56-60. In essence, the method of Baumgartner slows down or speeds up either the video frame rate or the audio frame rate as desired to maintain synchronization. See Col. 14, lines 35-40.

Baumgartner has nothing to do with the present invention.

Independent claim 1 (as well as other independent claims 22-23, 25-28 and 36-38), as amended, recites, among other things:

1. "a retiming function for a rampable retiming effect [that maps] output times to input times";
2. the operations of determining "a corresponding input time" and "computing an output . . . sample" are performed "*for each* output time" for audio and video samples; and
3. for audio or video samples, "computing an output . . . sample for the output time by applying a . . . resampling function to a plurality of input . . . samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input . . . samples to produce the output . . . sample."

The Final Office Action asserts that Figs. 5A, items 518-524 and Fig. 5B, along with Col. 6, lines 56-61 of Baumgartner correspond to a "retiming function." The claims refer to a retiming function that maps output times to input times. Note that the claims as amended define the input times and output times by, for example, "wherein the audio data comprises a sequence of audio samples, wherein each audio sample has a corresponding input time and wherein the video data comprises a sequence of video samples, wherein each video sample has a corresponding input time." In Baumgartner, steps 518-524 of Fig. 5A are: "Audio too far ahead and audio playing?"; If yes, then "stop audio"; "Is audio paused and video caught up?"; If yes, then "restart audio." See Baumgartner, Fig. 5A. Baumgartner's performance of such steps is not a retiming function that maps output times to input times as claimed. Moreover, col. 6, lines 56-

61 of Baumgartner merely states that "the synchronization error is used to assign a tempo value. . ." This computation, if considered a mapping, would be a mapping from an error to a tempo value, not output times to input times as claimed. The Final Office Action also asserts that "determining a corresponding input time" for an output time using the retiming function is met by Fig. 5A, items 512 and 514, Col. 13 lines 27-30 and lines 36-38. These steps in Fig. 5A merely retrieve a current video frame number and a current audio position from the drivers, then calculate an equivalent audio frame number corresponding to the current audio position. The equivalent audio frame number is calculated "using a fraction representing the number of bytes per equivalent audio frame to determine the audio frame number." See Col. 13, lines 35-44. In particular, the "number of bytes that are in an audio frame that is equivalent to a corresponding video frame" is used to compute the audio frame number given the current audio position. See Col. 12, lines 63-65. Thus, this computation, if considered a mapping, would be a mapping of a current audio position to an audio frame number, which is not a mapping of output times to input times as claimed. Therefore, Baumgartner does not teach the "retiming function . . . that maps output times to input times" as claimed. Because Baumgartner does not teach such a retiming function, then Baumgartner does not teach the operation of determining or computing "a corresponding input time . . . using the retiming function."

The Final Office Action does not specifically address the limitation that the operations of determining or computing "a corresponding input time" and "computing an output . . . sample" are performed "*for each* output time" for audio and video samples. In Baumgartner, as noted above, after playback is initiated, a "synchronization method . . . is called periodically during multimedia display to synchronize the video and audio data streams." Col. 6, lines 39-51. In particular, "the computer system includes a timer which periodically interrupts [a media control interface layer and driver] to direct [it] to invoke the synchronization module . . .." Col 12, lines 12-15. Because the first step of Baumgartner's synchronization process is to determine the "current position of the audio and video data" by "quer[ying] the audio and video drivers" (Col. 12, lines 17-18), Baumgartner is not performing the synchronization method for each output sample. Assuming, without agreeing, that Baumgartner's synchronization method corresponds to the claimed operations of "determining a corresponding input time" and "computing an output . . . sample," Baumgartner does not teach that these operations are performed "*for each* output time."

The Final Office Action also asserts that the adjustment of a tempo by Baumgartner is a "resampling function." More particularly, the Final Office Action asserts that "determining the adjustment to the tempo value is a resampling function" because it "generates an output sample (the synced multi-media presentation) from a plurality of input samples (audio and video) at different points in time (the synchronization of the presentation in sampled periodically (column 6, lines 39-41)." See Final Office Action page 24, lines 39-41.

Claims 1, 22-23, 25-28 and 36-38 as amended recite, for each output time (whether for video or for audio), "computing an output . . . sample for the output time by applying a . . . resampling function to a plurality of input . . . samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input . . . samples to produce the output . . . sample." The adjustment of frame rates in Baumgartner does not involve a video resampling function that combines information from the plurality of input video samples [from points in time surrounding the corresponding input time] to produce the output video sample and an audio resampling function that combines information from the plurality of input audio samples [from points in time surrounding the corresponding input time] to produce the output audio sample. Note that the claims as amended define the input times and output times by, for example, "wherein the audio data comprises a sequence of audio samples, wherein each audio sample has a corresponding input time and wherein the video data comprises a sequence of video samples, wherein each video sample has a corresponding input time." These claims as amended clearly distinguish from the Office Action's interpretation of Baumgartner in which the output sample is deemed to be a synced multimedia presentation that is generated by combining the audio and video.

In view of the foregoing, the rejection based on Baumgartner of independent claims 1, 22-23, 25-28 and 36-38 is traversed.

The limitations added to these independent claims, however, are derived in part from claims 9, 10 and 11, which have now been cancelled. Claims 9, 15 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner in view of Computer Vision, by Linda Shapiro et al. ("Shapiro"). Claims 10-11 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner and Shapiro, further in view of U.S. Patent Application 2002/0143547 ("Fay"). Accordingly, these references will be addressed.

Shapiro merely teaches a technique for computing motion vectors across two frames of an image sequence.

The Office Action asserts that Shapiro and Baumgartner if combined would have rendered obvious claim 9. The Office Action is understood as asserting that, if the references were combined, Baumgartner would have the capability of computing motion vectors between to video frames.

Such a combination of Baumgartner and Shapiro has nothing to do with computing each output audio sample by applying an audio resampling function to a plurality of input audio samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input audio samples to produce the output audio sample. Such a combination of Baumgartner and Shapiro has nothing to do computing each output video sample by applying a video resampling function to a plurality of input video samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input video samples to produce the output video sample.

Accordingly, the independent claims 1, 22-23, 25-28 and 36-38 as amended distinguish over the proposed combination of Shapiro and Baumgartner.

Fay teaches in its Fig. 4 a system in which audio content is received from audio sources (or "channels" as stated in the Office Action), and then audio data is generated from the received audio content.

The Office Action asserts that Fay, Shapiro and Baumgartner if combined would have rendered obvious claims 10 and 11. The Office Action in essence asserts that, if the references were combined, Baumgartner would have the capability of computing motion vectors between to video frames, on the one hand, and the ability to obtain a sound from several audio channels on the other hand.

The proposed combination of Baumgartner and Shapiro and Fay has nothing to do with computing *each* output audio sample by applying an audio resampling function to a plurality of input audio samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input audio samples to produce the output audio sample, as claimed. The proposed combination of Baumgartner and Shapiro

and Fay has nothing to do computing each output video sample by applying a video resampling function to a plurality of input video samples from points in time surrounding the corresponding input time, wherein the resampling function combines information from the plurality of input video samples to produce the output video sample, as claimed.

Accordingly, the independent claims 1, 22-23, 25-28 and 36-38 distinguish over the proposed combination of Shapiro and Baumgartner and Fay.

Similarly, regarding independent claims 29 and 34-35, these claims recite:

1. instead of a mapping of output times to input times, a "mapping a plurality of video events in the video data and a corresponding plurality of audio events in the audio data to a corresponding plurality of output times in the retimed clip"
2. "generating [an] output . . . sample" is performed "*for each* output time" for audio and video samples.
3. Both audio or video samples are generated by "processing the . . . data according to [a] resampling function that generates each output . . . sample . . . from a plurality of input . . .samples from points in time in the . . . data surrounding an input time mapped to the output time, to produce retimed . . . data, wherein the . . . resampling function combines information from the plurality of input . . . samples to produce the output . . . sample."

Regarding points 2 and 3, these claims have limitations similar to those found in the other independent claims 1, 22-23, 25-28 and 36-38 and should be allowable for at least similar reasons.

Regarding point 1, the claimed "mapping" is a form of mapping of output times to input times, as these claims indicate that the video events are in the video data and the audio events are in the audio data, and thus have corresponding input times. Therefore, since Baumgartner does not teach any such mapping, as discussed above, these claims distinguish from Baumgartner for at least similar reasons.

The remaining claims 2, 12, 14 and 30-32 are dependent claims that are allowable for at least the same reasons as the independent claims from which they depend.

In addition, regarding dependent claim 2, this claim recites "the retiming function is defined as a speed curve, and wherein the speed curve is integrated to determine the input times

from output times for both video data and audio data, wherein a step size used to compute an integral of the speed curve is less than or equal to a step size corresponding to a sampling rate of the audio data." The Office Action asserts that the "synchronization error quality [sic]" derived from the expected frame and the current frame in Baumgartner is a "speed curve." The Office Action further asserts that Baumgartner determines whether this synchronization error is within an "excepted margin," and that this "excepted margin" is a "step size". However, the claim says that the step size is used to compute the integral of the speed curve. The "excepted margin" in Baumgartner is not used to compute the integral of the "synchronization error." Accordingly the rejection of claim 2 is traversed.

Regarding claim 14, this claim as amended recites that the retiming function is "a mapping of a plurality of video events in the input video data and a corresponding plurality of audio events in the input audio data to a corresponding plurality of output times in the retimed clip," which is similar to language used in claims 29, 34 and 35, as discussed above. Therefore claim 14 also is distinguishable from Baumgartner for at least similar reasons as those independent claims.

Claims 30-32 have been amended. In particular, the claims further describe how an output sample is computed for each output time using a resampling function, using language similar to the language discussed above in connection with claim 1. Accordingly, these claims are allowable for at least similar reasons as claim 1, as Baumgartner fails to teach these limitations as noted above.

Rejections Under 35 U.S.C. §103

Claims 13, 24 and 33, of which claim 24 is independent, were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner in view of U.S. Patent 6,188,396 ("Boezeman").

Baumgartner was discussed above.

Regarding independent claim 24, the Office Action states that Baumgartner fails to teach "an editing interface allowing a user to associate a definition of a retiming function for a rampable retiming effect . . ." Office Action, page 18, last 3 lines. However, Boezeman, Fig. 12 and Col. 2, lines 41-61 is relied upon to teach this feature. The Office Action asserts that one of

ordinary skill in the art would have combined these features to allow "a user to specify the audio and video clips being specified." Office Action, page 19, lines 7-8.

With respect to independent claim 24 as amended, Baumgartner and Boezeman both fail to teach the limitations of claim 24, also discussed above in connection with claim 1, namely:

1. "a definition of a retiming function for a rampable retiming effect that maps output times to input times"
2. the operation of "computing an output . . . sample" is performed "*for each* output time" for audio and video samples.
3. for audio or video samples, "computing an output . . . sample for the output time by applying a . . . resampling function to a plurality of input . . . samples from points in time surrounding an input time . . . , wherein the resampling function combines information from the plurality of input . . . samples to produce the output . . . sample."

Boezeman is relied upon solely for its teachings regarding the placement of audio data and video data on tracks. However, the graphical user interface of Boezeman, exemplified by its Fig. 12, is not a user interface that allows a user to associate a definition of "a retiming function . . . that maps output times to input times" with the clip of synchronized audio and video data. Note that the claims as amended define the input times and output times by "wherein the audio data comprises a sequence of audio samples wherein each audio sample has a corresponding input time, and wherein the video data comprises a sequence of video samples wherein each video sample has a corresponding input time." Boezeman merely allows a user to synchronize the audio and video data and create the clip and has nothing to do with defining a retiming function as claimed.

Accordingly, the rejection of independent claim 24 is traversed.

Claims 13 and 33 are dependent claims that are allowable for at least the same reasons as the independent claims from which they depend (namely, claims 1 and 29 respectively).

In addition, claim 33 (and similarly, claim 18 discussed below) recites how a user may specify audio events and video events, and the output times to which they are mapped. The claim has been amended to clarify that the video events are in the video data, the audio events are in the audio data, and thus have corresponding input times; the output times are in the

retimed clip. As such there is nothing in Boezeman that teaches such a mapping from output times to input times to define a retiming function.

The remaining rejections under 35 U.S.C. §103(a) relate to dependent claims. In particular:

Claims 9, 15 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner in view of Computer Vision, by Linda Shapiro et al. ("Shapiro"). Claim 9 is cancelled and its subject matter has been incorporated into claim 1. The patentability of claim 1 over Baumgartner in view of Shapiro was addressed above. Claim 17 is cancelled. Claim 15 is dependent from claim 1 and therefore is allowable for at least the same reasons as claim 1.

Claims 10-11 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner and Shapiro, further in view of U.S. Patent Application 2002/0143547 ("Fay"). Claims 10 and 11 are cancelled and their subject matter has been incorporated into claim 1. The patentability of claim 1 over Baumgartner in view of Shapiro and Fay was addressed above. Claim 16 is dependent from claim 1 and therefore is allowable for at least the same reasons as claim 1.

Regarding the remaining dependent claims 3-8 and 18-21, Claims 3, 5-6, and 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner and in view of Levine et al., "A Sines+Transients+Noise Audio Representation for Data Compression and Time/Pitch Scale Modification", 1998 ("Levine"). Claims 4 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner and Levine further in view of U.S. Patent 6,665,450 ("Cornog"). Claims 18-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Baumgartner and Shapiro, further in view of Boezeman. These rejections are respectfully traversed. These claims are dependent claims that are allowable for at least the same reasons as the independent claims, which are discussed above. Claim 18 also is allowable for reasons similar to claim 33, as discussed above.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this reply, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, please charge any fee to **Deposit Account No. 50-0876.**

Respectfully submitted,

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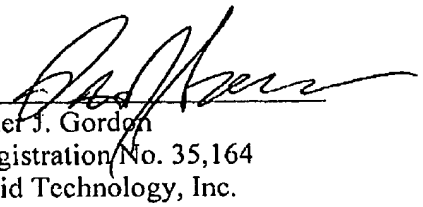
By 

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